



BEST AVAILABLE COPY

SEQUENCE LISTING

<110> Boneham et al.

<120> Peptide presentations for human immunodeficiency virus vaccines

<130> 87792.065605

<140> US 10/537,852

<141> 2005-06-08

<150> GB 0228939.5

<151> 2002-12-12

<160> 126

<170> PatentIn version 3.1

<210> 1

<211> 6

<212> PRT

<213> Human immunodeficiency virus

<400> 1

Glu Leu Asp Lys Trp Ala
1 5

<210> 2

<211> 4

<212> PRT

<213> Human immunodeficiency virus

<400> 2

Leu Asp Lys Trp
1

<210> 3

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 3

Ala Leu Asp Lys Trp Ala
1 5

<210> 4

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 4

Glu Leu Asn Lys Trp Ala
1 5

<210> 5

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 5

Glu Leu Asp Lys Trp Ala
1 5

<210> 6

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 6

Ala Leu Asp Thr Trp Ala
1 5

<210> 7

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 7

Gln Leu Asp Lys Trp Ala
1 5

<210> 8

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 8

Glu Leu Asp Thr Trp Ala
1 5

<210> 9

<211> 6

<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 9

Gly Leu Asp Lys Trp Ala
1 5

<210> 10
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 10

Lys Leu Asp Glu Trp Ala
1 5

<210> 11
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 11

Glu Leu Asp Arg Trp Ala
1 5

<210> 12
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 12

Asn Trp Phe Asp Ile Thr
1 5

<210> 13
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 13

Thr Trp Phe Asp Ile Ser
1 5

<210> 14
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 14

Asn Trp Phe Asp Ile Ser
1 5

<210> 15
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 15

Ser Trp Phe Asp Ile Ser
1 5

<210> 16
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 16

Asn Trp Phe Asp Ile Ser
1 5

<210> 17
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 17

Asn Trp Phe Glu Ile Thr
1 5

<210> 18
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 18

Thr Trp Phe Ser Ile Ser
1 5

<210> 19
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 19

Asn Trp Phe Asn Ile Ser
1 5

<210> 20
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 20

Asn Trp Phe Gly Ile Ser
1 5

<210> 21
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 21

Asn Trp Phe Ser Ile Thr
1 5

<210> 22
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 22

Ser Trp Phe Asn Ile Ser
1 5

<210> 23
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 23

Asn Trp Phe Thr Ile Ser
1 5

<210> 24
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 24

Ser Trp Tyr Asp Ile Ser
1 5

<210> 25
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 25

Asn Trp Phe Asn Ile Thr
1 5

<210> 26
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 26

Ser Trp Phe Ser Ile Thr
1 5

<210> 27
<211> 6
<212> PRT
<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 27

Ser Trp Phe Asp Ile Thr
1 5

<210> 28

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 28

Thr Trp Phe Asp Ile Thr
1 5

<210> 29

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 29

Ser Trp Phe Ser Ile Ser
1 5

<210> 30

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 30

Asp Trp Phe Ser Ile Thr
1 5

<210> 31

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 31

Asn Trp Phe Thr Ile Thr
1 5

<210> 32
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 32

Asp Trp Phe Asp Ile Thr
1 5

<210> 33
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 33

Asn Trp Phe Asp Ile Thr
1 5

<210> 34
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 34

Thr Trp Ser Asp Ile Thr
1 5

<210> 35
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 35

Asn Trp Phe Gly Ile Thr
1 5

<210> 36
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 36

Thr Trp Phe Asp Ile Thr
1 5

<210> 37

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 37

Thr Trp Phe Gly Ile Thr
1 5

<210> 38

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 38

Asn Trp Phe Ala Ile Ser
1 5

<210> 39

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 39

Asn Trp Phe Ser Ile Ser
1 5

<210> 40

<211> 6

<212> PRT

<213> Artificial

<220>

<223> epitope recognised by antibodies

<400> 40

Asn Trp Phe Asp Met Ser
1 5

<210> 41

<211> 6

<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 41

Ser Trp Phe Gly Ile Thr
1 5

<210> 42
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 42

Asp Trp Phe Ser Ile Ser
1 5

<210> 43
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 43

Ser Trp Phe Asn Ile Thr
1 5

<210> 44
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 44

Ser Trp Phe Glu Ile Ser
1 5

<210> 45
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 45

Asn Trp Phe Glu Ile Ser
1 5

<210> 46
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 46

Asn Trp Phe Asn Ile Ala
1 5

<210> 47
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 47

Thr Trp Phe Asp Ile Ala
1 5

<210> 48
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 48

Asn Trp Leu Asp Ile Thr
1 5

<210> 49
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 49

Asn Trp Leu Asp Ile Thr
1 5

<210> 50
<211> 6
<212> PRT
<213> Artificial

<220>
<223> epitope recognised by antibodies

<400> 50

Asn Trp Pro Asp Ile Thr
1 5

<210> 51
<211> 6
<212> PRT
<213> Artificial

<220>
<223> consensus amino acid sequence

<220>
<221> MISC_FEATURE
<222> (1)..(1)
<223> N/D/T/S

<220>
<221> MISC_FEATURE
<222> (3)..(3)
<223> F/Y/S/P

<220>
<221> MISC_FEATURE
<222> (4)..(4)
<223> any amino acid

<220>
<221> MISC_FEATURE
<222> (5)..(5)
<223> I/M

<220>
<221> MISC_FEATURE
<222> (6)..(6)
<223> S/T/A

<400> 51

Xaa Trp Xaa Xaa Xaa Xaa
1 5

<210> 52
<211> 4
<212> PRT
<213> Artificial

<220>
<223> consensus amino acid sequence

<220>
<221> MISC_FEATURE

<222> (3)..(3)
<223> any amino acid

<400> 52

Trp Phe Xaa Ile
1

<210> 53
<211> 13
<212> PRT
<213> Artificial

<220>
<223> peptide that binds IgG1-b12

<400> 53

His Glu Arg Ser Tyr Met Phe Ser Asp Leu Glu Asn Arg
1 5 10

<210> 54
<211> 6
<212> PRT
<213> Human immunodeficiency virus

<400> 54

Leu Asp Lys Trp Ala Ser
1 5

<210> 55
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 55

Lys Asn Glu Gln Asp Leu Leu Ala
1 5

<210> 56
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 56

Lys Asn Glu Lys Glu Leu Leu Glu
1 5

<210> 57

<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 57

Lys Asn Glu Gln Glu Leu Leu Ala
1 5

<210> 58
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 58

Lys Asn Glu Gln Asp Leu Met Ala
1 5

<210> 59
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 59

Arg Asn Glu Lys Asp Leu Leu Glu
1 5

<210> 60
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 60

Lys Asn Glu Leu Asp Leu Leu Ala
1 5

<210> 61
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 61

Lys Asn Glu Lys Asp Leu Leu Glu
1 5

<210> 62
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 62

Lys Asn Glu Gln Glu Leu Leu Glu
1 5

<210> 63
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 63

Lys Asn Glu Gln Asp Leu Leu Val
1 5

<210> 64
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 64

Gln Asn Glu Gln Asp Leu Leu Lys
1 5

<210> 65
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 65

Gln Asn Glu Gln Glu Leu Leu Glu
1 5

<210> 66
<211> 8
<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 66

Lys Asn Glu Leu Glu Leu Leu Glu
1 5

<210> 67

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 67

Lys Asn Glu Leu Glu Leu Leu Lys
1 5

<210> 68

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 68

Lys Asn Glu Gln Asp Leu Leu Glu
1 5

<210> 69

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 69

Glu Asn Glu Lys Glu Leu Leu Glu
1 5

<210> 70

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 70

Arg Asn Glu Lys Glu Leu Leu Glu

1 5

<210> 71
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 71

Lys Asn Glu Gln Glu Leu Leu Gly
1 5

<210> 72
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 72

Glu Asn Glu Gln Glu Leu Leu Glu
1 5

<210> 73
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 73

Lys Asn Glu Gln Ala Leu Leu Glu
1 5

<210> 74
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 74

Lys Asn Glu Leu Asp Leu Leu Glu
1 5

<210> 75
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 75

Lys Asn Gln Gln Glu Leu Leu Gln
1 5

<210> 76
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 76

Lys Asn Arg Gln Lys Leu Leu Lys
1 5

<210> 77
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 77

Lys Asn Glu Gln Gly Leu Leu Glu
1 5

<210> 78
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 78

Lys Asn Glu Gln Glu Leu Leu Lys
1 5

<210> 79
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 79

Lys Asn Glu Gln Glu Leu Ser Glu
1 5

<210> 80
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 80

Gln Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 81
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 81

Glu Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 82
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 82

Asn Asn Glu Lys Glu Leu Leu Glu
1 5

<210> 83
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 83

Lys Asn Glu Asn Asp Leu Leu Ala
1 5

<210> 84
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 84

Lys Asn Glu Glu Asp Leu Leu Ala
1 5

<210> 85

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 85

Asn Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 86

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 86

Lys Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 87

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 87

Gln Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 88

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 88

Arg Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 89

<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 89

Lys Asn Glu Gln Asp Leu Leu Gln
1 5

<210> 90
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 90

Lys Asn Glu Gln Glu Leu Leu Gln
1 5

<210> 91
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 91

Arg Asn Glu Gln Glu Leu Leu Glu
1 5

<210> 92
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 92

Lys Asn Glu Gln Asn Leu Leu Ala
1 5

<210> 93
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 93

Gln Asn Glu Gln Glu Leu Leu Ala
1 5

<210> 94
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 94

Arg Asn Glu Gln Glu Leu Leu Ala
1 5

<210> 95
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 95

Gln Asn Glu Gln Asp Leu Leu Ala
1 5

<210> 96
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 96

Thr Asn Glu Lys Asp Leu Leu Ala
1 5

<210> 97
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 97

Arg Asn Glu Lys Asp Leu Leu Lys
1 5

<210> 98
<211> 8
<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 98

Arg Asn Glu Lys Asn Leu Leu Glu
1 5

<210> 99

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 99

Lys Asn Glu Gln Glu Ile Leu Ala
1 5

<210> 100

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 100

Lys Asn Glu Gln Glu Leu Leu Ser
1 5

<210> 101

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 101

Lys Asn Glu Gln Asp Leu Leu Ser
1 5

<210> 102

<211> 8

<212> PRT

<213> Artificial

<220>

<223> site B inclusion sequence

<400> 102

Met Asn Glu Gln Asp Leu Leu Ala

1 5

<210> 103
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 103

Lys Asn Lys Gln Asp Leu Leu Ala
1 5

<210> 104
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 104

Met Asn Glu Gln Asp Leu Leu Gln
1 5

<210> 105
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 105

Ile Asn Glu Arg Asp Leu Leu Ala
1 5

<210> 106
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 106

Lys Ser Glu Lys Asp Leu Leu Glu
1 5

<210> 107
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 107

Tyr Asn Glu Lys Lys Leu Leu Glu
1 5

<210> 108
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 108

Thr Asn Glu Lys Ala Leu Leu Glu
1 5

<210> 109
<211> 8
<212> PRT
<213> Artificial

<220>
<223> site B inclusion sequence

<400> 109

Thr Asn Glu Lys Ser Leu Leu Glu
1 5

<210> 110
<211> 5
<212> PRT
<213> Artificial

<220>
<223> preceeding amino acid sequence

<400> 110

Ala Glu Gly Glu Phe
1 5

<210> 111
<211> 28
<212> PRT
<213> Artificial

<220>
<223> phage 28.3.1 peptide display

<400> 111

Glu Trp Glu Asp Val Glu Phe Glu Leu Asp Arg Trp Ala Leu Arg Ser
1 5 10 15

Cys Cys Pro Val Glu Gly Ala Trp Arg Trp Arg Gly
20 25

<210> 112
<211> 32
<212> PRT
<213> Human immunodeficiency virus

<400> 112

Ala Glu Gly Glu Phe Ala Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp
1 5 10 15

Lys Trp Ala Ser Leu Trp Cys Cys Phe Asn Ile Thr Asn Trp Leu Trp
20 25 30

<210> 113
<211> 30
<212> PRT
<213> Human immunodeficiency virus

<400> 113

Asn Gln Gln Glu Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys Trp
1 5 10 15

Ala Ser Leu Trp Asn Trp Phe Asn Ile Thr Asn Trp Cys Cys
20 25 30

<210> 114
<211> 25
<212> PRT
<213> Artificial

<220>
<223> modified IgG1-b12 epitope

<400> 114

Ala Glu Gly Glu Phe Ala Ala Ala Ala His Glu Arg Ser Tyr Met Phe
1 5 10 15

Ser Asp Leu Glu Asn Arg Cys Cys Ile
20 25

<210> 115
<211> 79
<212> PRT
<213> Artificial

<220>
<223> consensus HIV-1 subtype B epitope

<400> 115

Ala Glu Gly Glu Phe Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys
Page 26

1 5 10 15
 Trp Ala Ser Leu Ser Cys Cys Pro Asp Ile Thr Asn Trp Leu Trp Tyr
 20 25 30
 Gly Asp Pro Ala Lys Ala Ala Phe Asp Ser Leu Gln Ala Ser Ala Thr
 35 40 45
 Glu Tyr Ile Gly Tyr Ala Trp Ala Met Val Val Val Ile Val Gly Ala
 50 55 60
 Thr Ile Gly Ile Lys Leu Phe Lys Lys Phe Thr Ser Lys Ala Ser
 65 70 75

<210> 116
 <211> 83
 <212> DNA
 <213> Artificial

<220>
 <223> primer for consensus HIV-1 subtype 2 epitope

<400> 116
 aaaaacgaac aggaactgct ggaactggat aaatgggcga gcctgagctg ctgcccggcg 60
 gagggcgcct ggcgctggcg cgg 83

<210> 117
 <211> 32
 <212> DNA
 <213> Artificial

<220>
 <223> primer for consensus HIV-1 subtype 2 epitope

<400> 117
 gattgaattc aaaaacgaac aggaactgct gg 32

<210> 118
 <211> 26
 <212> DNA
 <213> Artificial

<220>
 <223> primer for consensus HIV-1 subtype 2 epitope

<400> 118
 aattggatcc ccgcgccagc gccagg 26

<210> 119
 <211> 36
 <212> DNA
 <213> Artificial

<220>
 <223> colicin R domain plasmid primer

<400> 119
 tggcgctggc gcgggcgaca ggctaaagct gttcag 36

<210> 120
 <211> 22
 <212> DNA
 <213> Artificial

<220>
 <223> colicin R domain plasmid primer

<400> 120
 cctcgagctc ttttgcagca gc 22

<210> 121
 <211> 21
 <212> DNA
 <213> Artificial

<220>
 <223> 28.3.1 pIF4 plasmid primer

<400> 121
 tcaatgatga tgatgatgat g 21

<210> 122
 <211> 38
 <212> DNA
 <213> Artificial

<220>
 <223> 28.3.1 pIF4 plasmid primer

<400> 122
 tgaacagctt tagcctgtcg cccgcgccag cgccaggc 38

<210> 123
 <211> 116
 <212> PRT
 <213> Artificial

<220>
 <223> colicin R domain fusion peptide

<400> 123

Ala Glu Gly Glu Phe Glu Trp Glu Asp Val Glu Phe Glu Leu Asp Arg
 1 5 10 15

Trp Ala Leu Arg Ser Cys Cys Pro Val Glu Gly Ala Trp Arg Trp Arg
 20 25 30

Gly Arg Gln Ala Lys Ala Val Gln Val Tyr Asn Ser Arg Lys Ser Glu
 35 40 45

Leu Asp Ala Ala Asn Lys Thr Leu Ala Asp Ala Ile Ala Glu Ile Lys

50

55

60

Gln Phe Asn Arg Phe Ala His Asp Pro Met Ala Gly Gly His Arg Met
65 70 75 80

Trp Gln Met Ala Gly Leu Lys Ala Gln Arg Ala Gln Thr Asp Val Asn
85 90 95

Asn Lys Gln Ala Ala Phe Asp Ala Ala Ala Lys Glu Leu Glu His His
100 105 110

His His His His
115

<210> 124
<211> 27
<212> PRT
<213> Artificial

<220>
<223> fibrin trimeric sequence of bacteriophage T4

<400> 124

Gly Tyr Ile Pro Glu Ala Pro Arg Asp Gly Gln Ala Tyr Val Arg Lys
1 5 10 15

Asp Gly Glu Trp Val Leu Leu Ser Thr Phe Leu
20 25

<210> 125
<211> 47
<212> PRT
<213> Artificial

<220>
<223> modified 2F5 epitope

<400> 125

Ala Glu Gly Glu Phe Lys Asn Glu Gln Glu Leu Leu Glu Leu Asp Lys
1 5 10 15

Trp Ala Ser Leu Ser Tyr Ile Pro Glu Ala Pro Arg Asp Gly Gln Ala
20 25 30

Tyr Val Arg Lys Asp Gly Glu Trp Val Leu Leu Ser Thr Phe Leu
35 40 45

<210> 126
<211> 90
<212> PRT
<213> Artificial

<220>

<223> 2F5 epitope carrying peptide

<400> 126

Arg Gly Arg Gln Ala Lys Ala Val Gln Val Tyr Asn Ser Arg Lys Ser
1 5 10 15

Glu Leu Asp Leu Ser Cys Cys Pro Ala Ala Asn Lys Thr Leu Ala Asp
20 25 30

Ala Ile Ala Glu Ile Lys Gln Phe Asn Arg Phe Ala His Asp Pro Met
35 40 45

Ala Gly Gly His Arg Met Trp Gln Met Ala Gly Leu Lys Ala Gln Arg
50 55 60

Ala Gln Thr Asp Val Asn Asn Lys Gln Ala Ala Phe Asp Ala Ala Ala
65 70 75 80

Lys Glu Leu Glu Leu Val Pro Arg Gly Ser
85 90